INSTALLATION, USER AND MAINTENANCE MANUAL FOR WATER OSMOSIS UNIT



EQUIPMENT FOR POTABLE WATER TREATMENT

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TECHNICAL INSTRUCTIONS:



These are intended for the qualified staff who are to install, commission and test the appliance and carry out any servicing and repairs.

USER INSTRUCTIONS:



These provide recommendations for use, a description of the controls and the correct procedures for cleaning and maintaining the Osmosis Treatment Unit.

WARNINGS:



Warnings regarding operations which are prohibited inasmuch as they can result in injury or damage.



THIS MANUAL IS AN INTEGRAL PART OF THE OSMOSIS TREATMENT UNIT; KEEP IT CAREFULLY IN THE VICINITY OF THE MACHINE AND READ THE INSTALLATION AND USER INSTRUCTIONS CONTAINED IN IT.

1. General warnings



STORAGE:

THE PACKED APPLIANCE MUST BE STORED IN A DRY, CONDENSATION-FREE AREA, UNDER COVER. THE ADMITTED STORAGE TEMPERATURE IS 4-50°C.



ALWAYS DISCONNECT **ELECTRICAL POWER** BEFORE WORKING ON THE APPLIANCE OR DISASSEMBLING IT.



POSITIONING, HOOKUP, COMMISSIONING, TROUBLESHOOTING AND REPLACING POWER CABLES MUST ALWAYS BE DONE BY QUALIFIED PERSONS.



CHANGES IN THE POWER VOLTAGE OF MORE THAN 10% OF THE RATED VALUE CAN DAMAGE THE ELECTRICAL CIRCUITS; MONITOR THE MAINS VOLTAGE CONSTANTLY.



THE APPLIANCE MUST BE GROUNDED AS REQUIRED BY ELECTRICAL EQUIPMENT SAFETY STANDARDS.



THIS UNIT **IS INTENDED ONLY** FOR THE INTENDED PURPOSE OF **TREATING WATER FOR TECHNICAL PURPOSES**.



SHIPPING/DELIVERY:

THERE ARE NO SPECIAL PRECAUTIONS FOR UNPACKING THE APPLIANCE, EXCEPT FOR THE NORMAL CARE REQUIRED IN HANDLING FRAGILE MATERIALS. BEFORE DISPOSING OF THE PACKAGING, MAKE SURE IT DOES NOT CONTAIN ANY PARTS, INSTRUCTION BOOKLET OR OTHER DOCUMENTATION.



THE PACKAGING (CARDBOARD, EXPANDED POLYSTYRENE, PALLET, ETC.) **MUST NOT BE LEFT WITHIN THE REACH OF CHILDREN**, SINCE THEY ARE HAZARDOUS MATERIALS.



THE OSMOSIS TREATMENT UNIT MAY BE **REMOVED FROM ITS ORIGINAL POSITION** ONLY BY **SPECIALISED PERSONS**.



WHEN CLEANING THE APPLIANCE **DO NOT USE** CORROSIVE PRODUCTS, ACIDS, STEEL PADS OR BRUSHES.



DO NOT WASH THE APPLIANCE WITH DIRECT OR HIGH PRESSURE JETS OF WATER.





THE MANUFACTURER **DECLINES ALL LIABILITY** FOR INJURY/DAMAGE TO PERSONS OR PROPERTY **CAUSED BY NON-OBSERVANCE** OF THE INSTRUCTIONS GIVEN IN THIS MANUAL, **INCORRECT USE**, **TAMPERING** BY **UNQUALIFIED PERSONS**, **TAMPERING** WITH EVEN ONE PART OF THE APPLIANCE, OR THE USE OF **NON-ORIGINAL SPARE PARTS**, OR MODIFICATIONS, ACCESSORIES OR DEVICES OF ANY KIND APPLIED TO THE APPLIANCE UNLESS EXPRESSLY SPECIFIED IN THIS MANUAL.



THIS APPLIANCE IS MARKED AS REQUIRED BY EU DIRECTIVE **2002/96/EC**, WASTE ELECTRICAL AND ELECTRONIC EQUIPMENT (WEE).

BY MAKING SURE THAT THIS PRODUCT IS DISPOSED OF CORRECTLY THE USER HELPS TO PREVENT POTENTIAL DETRIMENTAL EFFECTS ON HEALTH AND THE ENVIRONMENT.

THE SYMBOL A ON THE PRODUCT OR IN THE TECHNICAL DOCUMENTATION INDICATES THAT THIS PRODUCT MUST NOT BE TREATED AS ORDINARY DOMESTIC WASTE BUT MUST BE CONSIGNED TO THE SPECIAL COLLECTION POINT FOR THE RECYCLING OF ELECTRICAL AND ELECTRONIC EQUIPMENT.

WHEN DECOMMISSIONING THE APPLIANCE COMPLY WITH THE LOCAL WASTE DISPOSAL REGULATIONS.

FOR FURTHER INFORMATION ON THE TREATMENT, RECOVERY AND RECYCLING OF THIS PRODUCT, CONTACT THE COMPETENT LOCAL OFFICE, THE DOMESTIC WASTE COLLECTION SERVICE, OR THE SHOP WHERE THE PRODUCT WAS PURCHASED.



FOR ANY TECHNICAL OR OPERATIONAL INFORMATON, PLEASE CONTACT OUR **TECHNICAL SERVICE DEPARTMENT**.



IMPORTANT:

DURING THE WARRANTY PERIOD THE MACHINE MAY NOT BE WORKED ON WITHOUT ADVANCE AUTHORISATION FROM OUR TECHNBICAL SERVICE DEPARTMENT. FAILURE TO ABIDE BY THIS RULE VOIDS THE WARRANTY.

2. Technical characteristics

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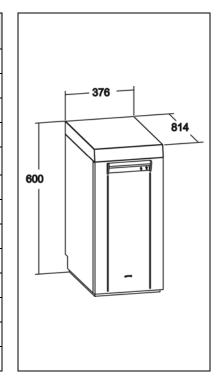
GENERAL DESCRIPTION:

THE APPLIANCE PRODUCES OSMOSIS- TREATED WATER, WITHOUT DISSOLVED SALTS, WITH A RESIDUAL CONDUCTIVITY IN THE RANGE 20 TO 100 MICROSIEMENS, INTENDED **EXCLUSIVELY** FOR TECHNOLOGICAL APPLICATIONS. THE UNIT CONSISTS OF AN ARRAY OF FILTER CARTRIDGES. THE INVERSE OSMOSIS MEMBRANES ARE LODGED IN POLYPROPYLENE HOUSINGS. THE OSMOSIS PUMP IS CONSTRUCTED IN BRASS

			Dimensions		
Height	814	mm	Empty weight	60	kg
Width	376	mm	Empty weight including packaging	67	kg
Depth	600	mm			

Installation characteristics					
Power cable 3x1 length 1.5 m Diameter of waste discharge pipe 4 mm				mm	
Plug	Schuko		Length of waste discharge pipe	1.5	m
Length of filler pipe	1.5	m	Delivery fitting	3/4	inches
Filler pipe collar 3/4 inches					

Technical characteristics			
Single phase power voltage	230	V	
Frequency	50	Hz	
Osmosis pump power rating	450	w	
Delivery pump power rating	300	W	
Min/max water supply pressure	150-600 (1.5-6)	kPa (bar)	
Max osmosis-treated water output	150	l/h	
Max water supply temperature	30	°C	
Max water supply hardness	40	°F	
Max water supply conductivity	2.000	μS/cm	
Max water supply chlorine content	<0.1	mg/l	
Max water supply iron content	<0.02	mg/l	
Min/max delivery pump pressure	0.5-1.8	Bar	
Max delivery pump output	20	I/h	



3. Positioning and installation



THE APPLIANCE MUST BE CONSIDERED AND HANDLED AS FRAGILE MATERIAL.



THE CIRCUIT DOWNSTREAM OF THE UNIT MUST BE CONSTRUCTED IN PLASTIC AND STAINLESS STEEL TO PREVENT CORROSION.



IF THE WATER SUPPLY CONTAINS PARTICLES IN SUSPENSION, AN EXTERNAL FILTER MUST BE INSTALLED TO PROVIDE SUFFICIENT DOWNSTREAM FLOW AND PRESSURE; THIS FILTER MUST BE KEPT IN PERFECT CONDITION AT ALL TIMES.

Positioning:

Before installing the appliance, check that there is sufficient clearance for easy extraction of consumables and for servicing the unit. Check that there is a power socket in the vicinity of the unit. The appliance is designed for installation in clean area, protected from freezing temperatures.

Before installation, check:

- that there is sufficient space for the plumbing
- that there is good access for equipment, inspections and maintenance

Electrical hookup:

Make sure the power supply is adequate to the unit's draw.

Caution: the power voltage rating is given on the unit's dataplate.

WARNING: Do not open the unit's electrical panel; only qualified persons may do this.

Plumbing hookup:

Hook the machine up as indicated on the unit itself, "**IN**" indicates the water supply inlet, "**OUT**" indicates the osmosi-treated water outlet, **RJ** indicates the discharge outlet. Remove the red cap "T" from the **RJ** fitting and insert the water drain pipe supplied with the unit.

Apply the supplied pipe to the OUT fitting and equip its free end with a corrosion-proof cock if it is not hooked up directly to the service.

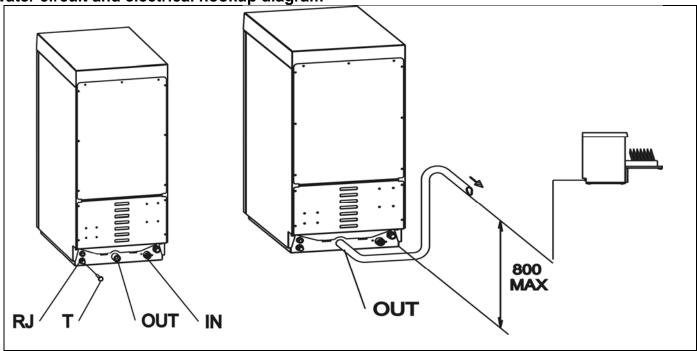
The water supply pressure may not exceed 6 bar nor be less than 1.5 bar.



WHEN FIRST RUNNING THE UNIT AND AFTER ANY SERVICE, RUN THE WATER DELIVERY TO A DRAIN FOR AT LEAST 20 MINUTES SO AS TO ELIMINATE ANY IMPURITIES RESULTING FROM THE WORK JUST DONE

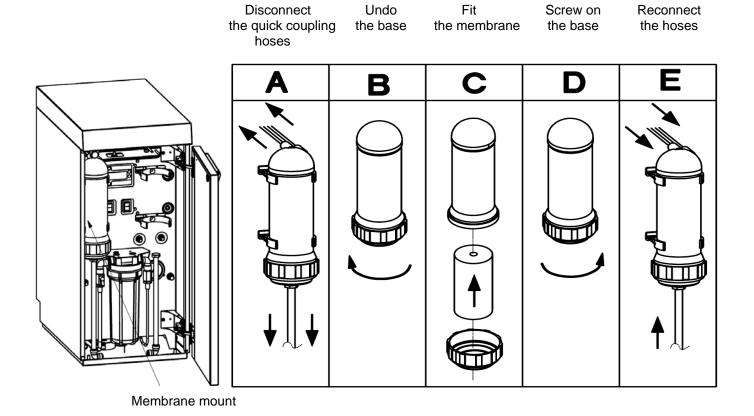
All quick fittings are of the type John Guest

Water circuit and electrical hookup diagram



Installing the membranes

Open the front door to access the membrane housings, which must be kept in their original packaging until the machine is started up



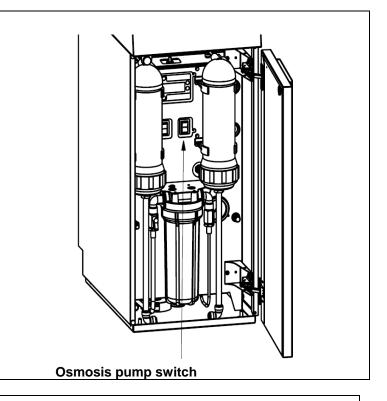
Pressurizing and starting up the unit:

After all pipes have been connected, pressurise the system gradually and check for leaks. Turn the "Osmosis pump" switch to "I". Check that the following message displays:

RJ.....LT/H RR...% US/CM

In normal operation the value **Rj** varies during osmosis-treated water production.

Wait **5-10 minutes**, then continue by starting up the delivery pump.



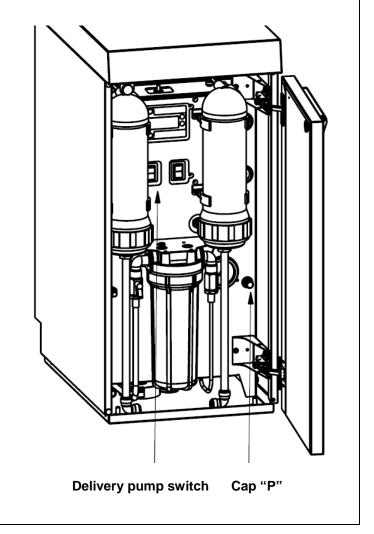
IMPORTANT!!!

Delivery pump startup (first startup)

Remove the red bleeder cap ${\bf P}$ ("Sfiato innesco") on the front (close to the pressure gauge, labelled as such) .

To remove the cap, press the John Guest clip and allow a bit of water to run into a container; refit the cap **P**, and actuate the "Delivery pump" switch.

FAILURE TO FOLLOW THIS PROCEDURE TO THE LETTER CAN CAUSE SERIOUS DAMAGE TO THE DELIVERY PUMP.

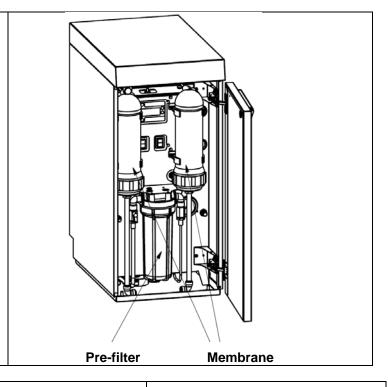


4. Maintenance

The osmosis treatment unit runs completely automatically and maintenance is minimal. The only essential operation is periodic replacement of the filter cartridges.

IMPORTANT

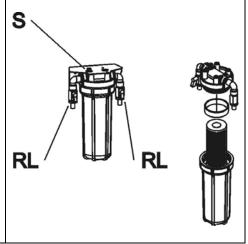
Replace the pre-filter every 3000 hours of operation and **AT LEAST 1 time a year**.



Replacing the pre-filter:

Filter cartridge replacement procedure

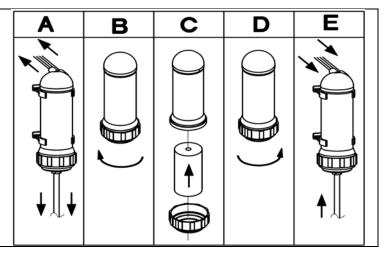
- Shut off power;
- Close the side cocks (RL);
- Vent the circuit from the top cap (S);
- Unscrew the filter housing (use the special wrench supplied in the accessories bag). Place a container to drain the water in the filter into;
- Fit the new cartridge and check it is correctly seated;
- Close vent **S** and open the side cocks **RL**;
- Check for leaks and water in the bottom of the appliance;
- Dry it off thoroughly.



Replacing the membranes:

Cartridge replacement procedure.

- Shut off power;
- Disconnect all hoses from the membrane housings, unscrew the base, and place a container to catch the water contained in the cartridges;
- Refit the membrane, check the seating of the o-ring and screw the housing fully in; reconnect the hoses and make sure they are correctly seated;
- Do not apply excessive force;
- Fit the new cartridge and check it is correctly seated;
- Start the unit up and check for leaks.



Special adjustments:

RECIRCULATION

Recirculation retreats the waste water to reduce the amount of water rejected. Turn the needle valve "Recirculation" to retreat the waste water, thus reducing overall water consumption.

Important!

Make sure, when making adjustments, that the pressure gauge reading never exceeds 10-11 bar.

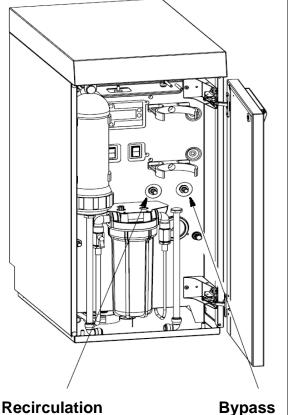
BYPASS

Turn the "Bypass" needle valve to adjust the conductivity of the osmosis-treated water, at the expense of the hourly water production and the amount of water rejected.

NOTE:

In both cases, before setting the needle valves you must slacken off their collars and tighten them down after the adjustment has

Collar



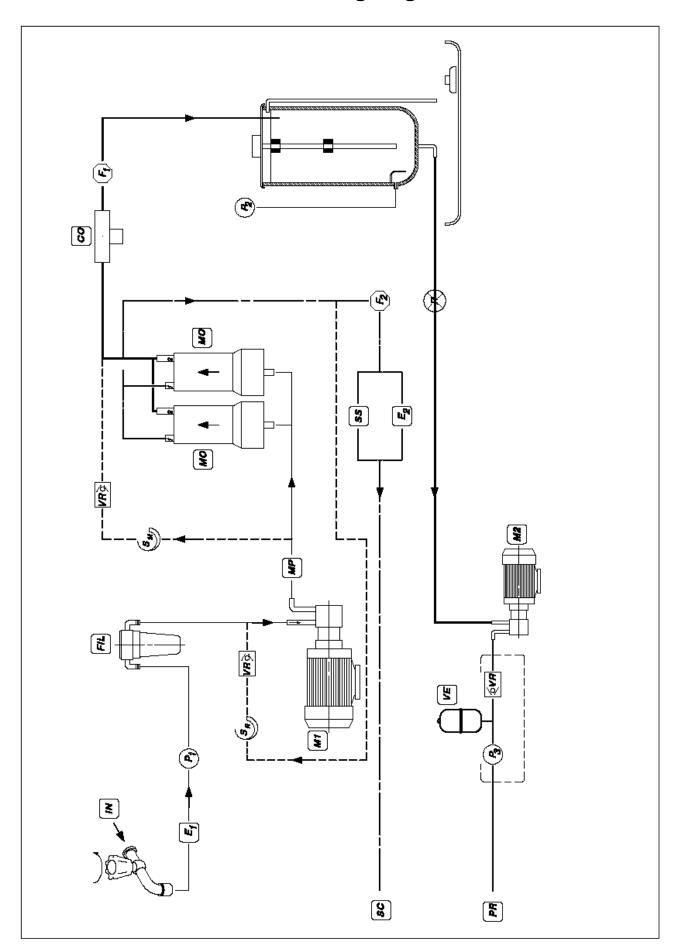


Inactivity:

There are no special warnings regarding maintaining the appliance's operability when kept inactive for short periods of time.

For long periods of inactivity contact your local Authorised Reseller so that he can remove and store the inverse osmosis membranes and also restart the unit after recommissioning as for the first installation.

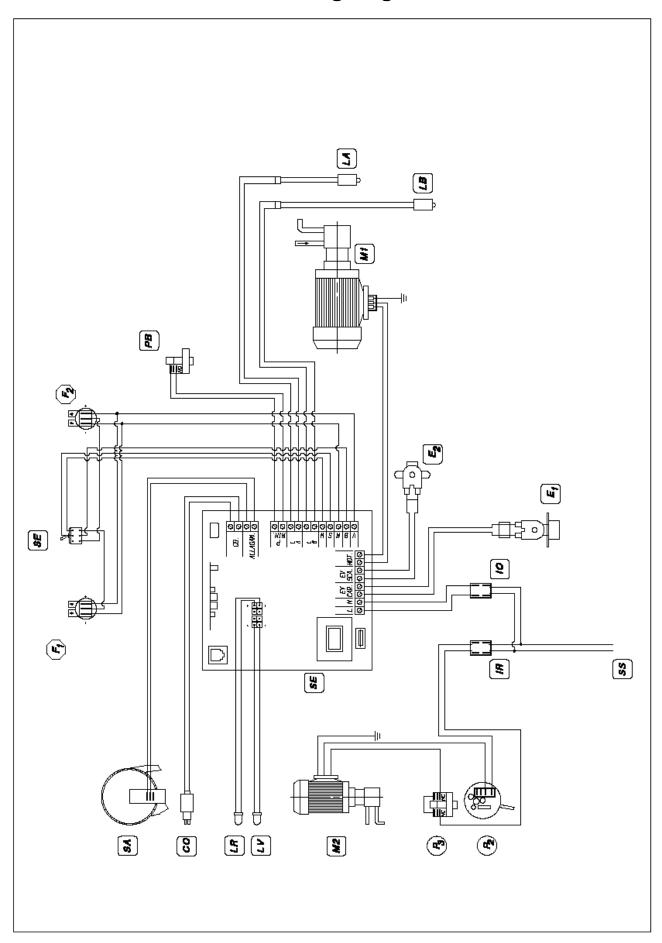
5. Plumbing diagram



	LEGEND HYDRAULIC DIAGRAM				
IN	Water inlet	F_1	Product flow meter		
E_1	Filler solenoid valve	P_2	Delivery minimum pressure switch		
P_1	Filler pressure switch	R	Vat cock		
FIL	Filter - CARBONLOK 5 micron	M2	Delivery pump		
M1	Osmosis pump	F_2	Waste flow meter		
S_R	"Re-treatment" needle valve	E_2	Discharge solenoid valve		
VR	Non-return valve	SS	Discharge choke		
MP	Pump pressure gauge	VE	Espansion tank		
S_M	Mixer needle valve	P_3	Delivery pressure switch		
МО	Osmosis membrane	SC	Water discarded		
CO	Conductivity meter	PR	Produced water		

	LEGEND ELECTRIC DIAGRAM				
SA	Anti flooding sensor	Ю	Osmosis switch		
CO	Conductivity meter	E ₁	Filler solenoid valve		
LR	Red led	E ₂	Discharge solenoid valve		
LV	Green led	M1	Osmosis pump		
SE	Electronic board	LB	Low level switch		
M2	Delivery pump	LA	High level switch		
P_3	Delivery pressure switch	PB	Low pressure switch		
P_2	Delivery minimum pressure switch	F ₂	Waste flow meter		
SS	Shuko plug	SE	Selector		
IR	Delivery switch	F_1	Product flow meter		

6. Wiring diagram



Electrical specifications:

Power supply: 230v AC 50/60Hz

Max motor outlet load: 16A_ at 230V AC

Max load on solenoid valve 1 outlet: 1A_ at 230v AC Max load on solenoid valve 2 outlet: 1A_ at 230V AC

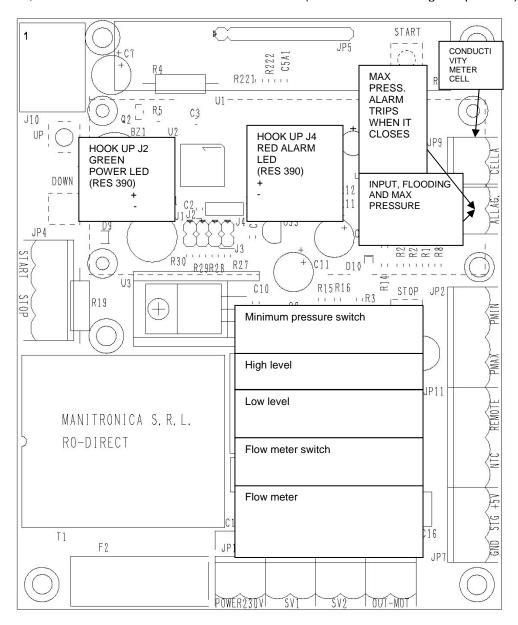
Instrumentation:

Conductivity meter (normalised at 20°C) scale: 0-200uS/cm with probe

K=5. Class (overall): 1

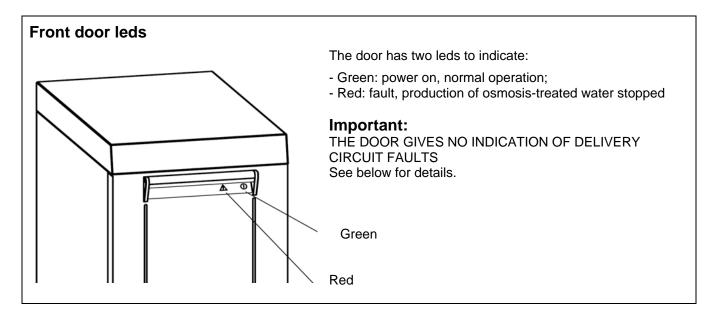
Calibrated by samples. Switchable display of uS/cm and mg/l; simply press the down button during operation.

Flow meter: pulses/l given by sensor: programmable (to account for laminar and lamellar water flow). Just one flow meter is provided, which can be switched to read a second flow (simultaneous reading: not possible).



Inputs: high level, low level, flow meter switch, minimum pressure switch: inputs receive only voltage-free contacts. Caution: do not route these cable together with power or other loads (duct them separately).

6- Faults



List of faults

A) No osmosis-treated water delivery

Possible causes	Subcause	Solution	Display alarm message	
	No water in vat	See point "B"	see point "B"	
	No electrical power	Check power supply and power switch ON (see "Positioning and installation") Power plug not inserted in electrical panel (insert)		
	No power to pump	Check connections and whether board is sending a signal Pump condenser faulty (replace)		
Delivery pump not running	Vat pressure switch faulty (jammed on empty)	Empty vat (manually with jumper on delivery pump or cock –fig.4) and replace pressure switch (fig.1)		
	Delivery pressure switch faulty (jammed on full)	Replace, or adjust the pressure with the adjuster screw (fig.2)		
	Non-return valve jammed (does not open)	Check valve, if jammed replace/clean (fig.3)	none	
	Vat not full enough for use (min level)	Wait for a few minutes while it fills		
	No water arriving at pump: vat suction pipe blocked/crimped/cock closed	Remove obstacle/open cock (fig.4)		
Delivery pump runs	Air in delivery pipe	Shake pipe and see if air rises into the vat		
but does not deliver or only insufficiently	Impeller damaged/broken	Replace		
	The user requires minimum intake pressure of >1.8 BAR	System limit		
	The user requires flow > 20 l/min	Reduce user load		

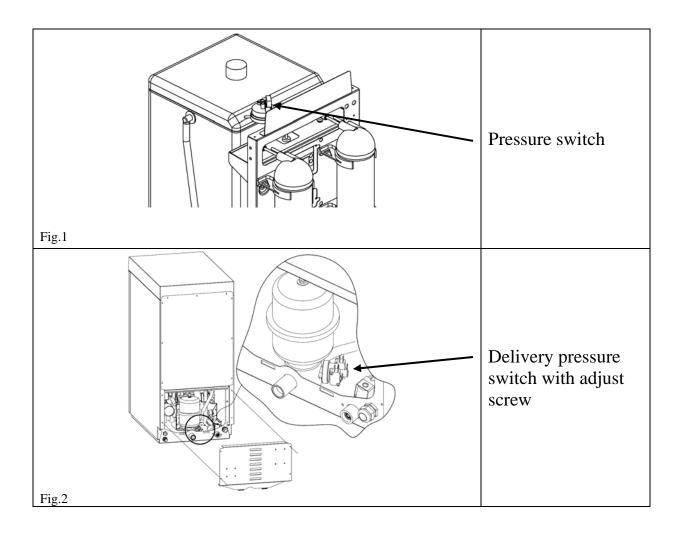
B) Osmosis-treated water not produced

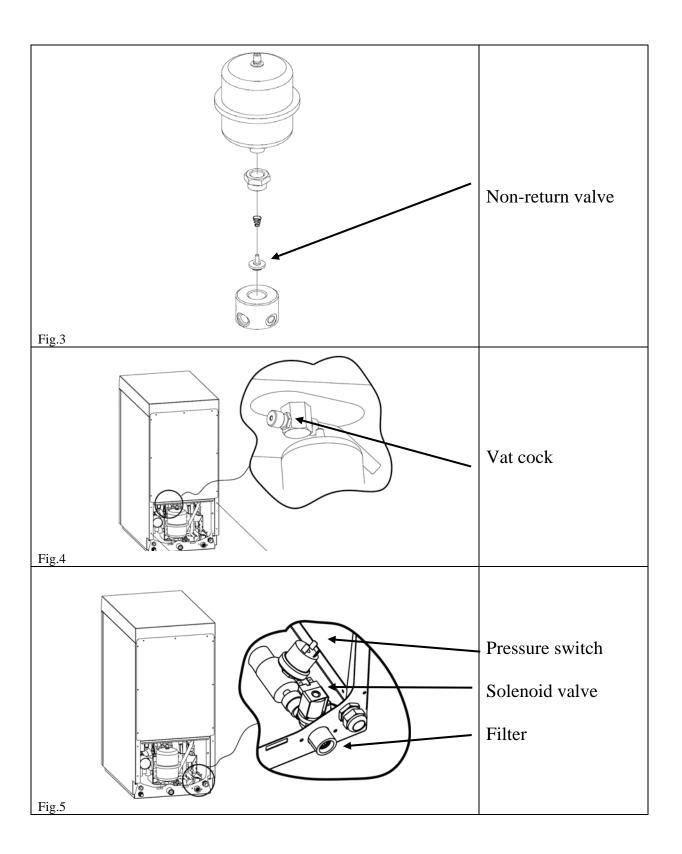
Possible causes	Subcause	Solution	Display alarm message
	No electrical power	Check power supply and power switch ON (see "Positioning and installation")	
	No power to pump	Power plug not inserted in electrical panel (insert) Check connections and whether board is sending a signal Pump condenser faulty (replace)	none
	Intake pressure switch faulty (jammed on full)	Replace, or adjust the pressure with the adjuster screw (fig.5)	
Comocia numa	Vat level switch (low) faulty (jammed on full)	Max level switch faulty, does not send production enable signal (replace/clean) (see wiring diagram)	
Osmosis pump not running	No water supply or supply pressure/flow inadequate	- Supply cock closed OPEN; - Supply filter blocked CLEAN - Supply pressure should be > 1.5 bar - Pre-filter up/downstream cocks closed OPEN (see maintenance section) - Filter blocked – REPLACE (fig.5) - Filler solenoid valve faulty or no power – REPLACE IF FAULTY (fig.5) - Intake pressure switch faulty (jammed on empty) – REPLACE (fig.5)	Low pressure
	Water in vat	Vat level switch (high) faulty, does not switch to full: continues producing with overflow. REPLACE (see wiring diagram)	Flooding alarm
	Water supply too cold (<10°)	Increase supply temperature	
	Pre-filter blocked	Replace pre-filter (see maintenance section)	
	Membranes blocked	Replace membranes (see maintenance section)	
Osmosis pump running but production low	Impeller damaged/broken	Check pressure gauge reading if > 8, replace pump or impeller as required	
	Bypass valves need adjustment	See special adjustments section	
	Discharge pipe crimped	Route pipe properly	
	Pressure drop in vat supply hoses	Shut off power, dry thoroughly and repair leak	

C) Water production not conforming

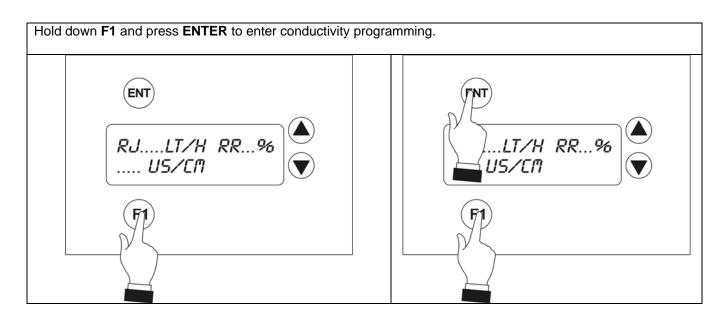
Display alarm message	Cause of alarm	Solution
		Adjust "bypass" needle valve
НННН	The treated water does not conform with settings	Replace membranes
		Replace pre-filter (see maintenance section)
LLLL	The water production is below the set value	Replace membranes (see maintenance section)
		Adjust "bypass" needle valve

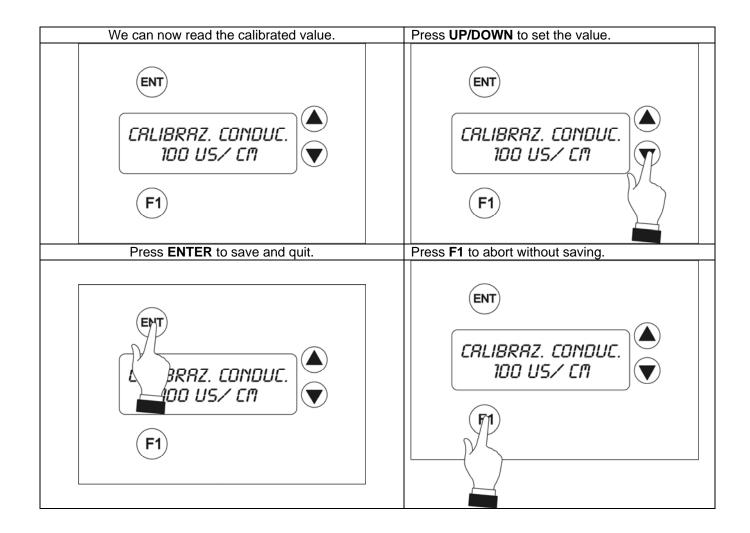
Figures

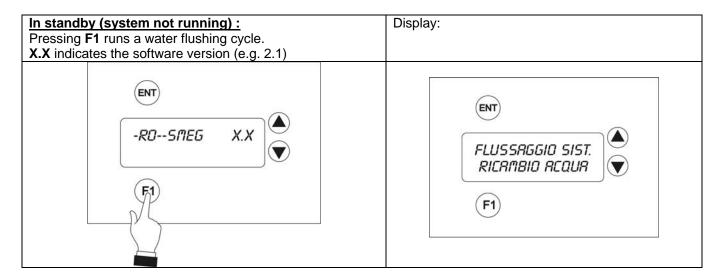




7. Electronic circuit board and programming







After a few minutes, switch off and on again with the osmosis pump switch.

In stand by: hold down **UP/DOWN** together to enter programming mode: (in all the following procedures: **UP/DOWN** changes the value, **ENTER** saves and continues, **F1** continues without saving).

Programming procedures: >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	Display: Program filtration hours
F1	PROGRAMMAZIONE OTO- ORE IMPOST. F1
Press ENTER or F1: Flussaggio auto (auto flush): This is an auto flush cycle run by the system to prevent stagnation in the circuit. After the set number of hours, the solenoid valves open to flush/refresh the water in the circuit.	F1

Press ENTER or F1 : Stop motore se in moto per (Stop motor after) The following two messages concern the osmosis pump motor condition. Set = 0 to exclude this mode; if the value is not 0, the motor stops running after having run continuously for the set period, then starts again.	STOP MOTORE SE IN MOTO PER
After two seconds, the system displays:>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	SE=O NIENTE STOP IN MOTO PER DOD F1
Press ENTER or F1 : If the conductivity value remains below set value, no alarm trips, otherwise an alarm displays.>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	SETPOINT CONDUC. 100 US/ CM
Press ENTER or F1: Set number of pulses per litre for the product flow meter.>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	IMPOSTRZIONE PR. IMPULSI/LT.0100
Press ENTER or F1: Set number of pulses per litre for the waste flow meter.>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	IMPOSTRZIONE RG. IMPULSI/LT.0100
Press ENTER or F1: Set minimum production below which a fault is reported.>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	IMPOST. LOW PR. SETPOINTO SOLT/H F1

Press **ENTER** or **F1**; the system returns to standby.

